

Texas Water Development Board



WATER Conditions

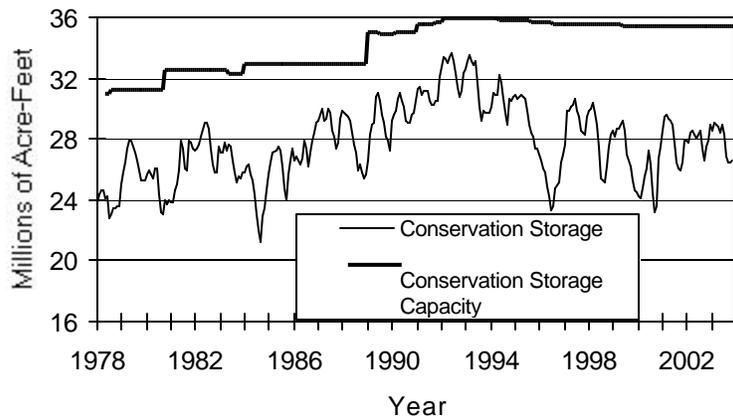
RESERVOIR STORAGE

November 2003

Near the end of November, the 77 reservoirs monitored for this report held 26.54 million acre-feet in conservation storage, or 77 percent of the conservation storage capacity of the state's major reservoirs. Statewide total storage is below normal for this time of year. Storage increased during the month by 67,450 acre-feet (0.2% of conservation storage capacity). Compared to the previous year, storage is slightly less, down 1.3 million acre-feet (-3.8%).

Storage in the Upper Coast Region is near capacity (99%), while the High Plains (24%) and Trans-Pecos (18%) Regions remained lower than one-third. Storage is at 100% in 7 reservoirs, same as last month. Compared to this time last year, the Edwards Plateau had the largest increase in storage (+9%), while the South Central region had the steepest decline (-10%).

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS



Current data are based on elevation near end of month at 77 reservoirs that represent 98 percent of total conservation storage capacity in Texas reservoirs having a capacity of 5,000 acre-feet or more.

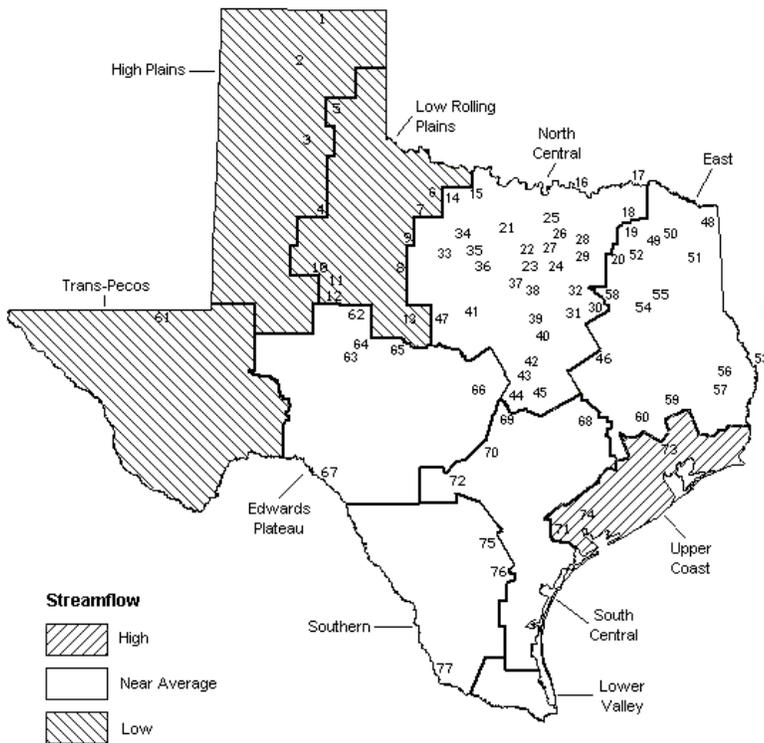
STREAMFLOW

Of 29 reporting index stations in November, computed 31-day mean flows were high (5% - 30% exceedance) at 8 stations, near normal (30% - 70% exceedance) at 10 stations, low (70% - 95% exceedance) at 9 stations, and very low (>95%) at 2 stations. In comparison to October, flows increased at 11 index stations, decreased at 17, and remained unchanged at 1.

On a regional basis, flows in November were high in the Upper Coast Regions, low in the Low Rolling, Trans-Pecos and High Plains Regions, and near normal everywhere else.

NOVEMBER STREAMFLOW CONDITIONS

Reservoirs Shown on Map



- | | |
|----------------------------------|-----------------------------|
| 1. Palo Duro Reservoir | 40. Waco Lake |
| 2. Lake Meredith | 41. Proctor Lake |
| 3. MacKenzie Reservoir | 42. Belton Lake |
| 4. White River Lake | 43. Stillhouse Hollow Lake |
| 5. Greenbelt Reservoir | 44. Lake Georgetown |
| 6. Lake Kemp | 45. Granger Lake |
| 7. Miller's Creek Reservoir | 46. Lake Limestone |
| 8. Fort Phantom Hill Reservoir | 47. Lake Brownwood |
| 9. Lake Stamford | 48. Wright Patman Lake |
| 10. Lake J. B. Thomas | 49. Lake Cypress Springs |
| 11. Lake Colorado City | 50. Lake Bob Sandlin |
| 12. Champion Creek Reservoir | 51. Lake O' the Pines |
| 13. Hords Creek Lake | 52. Lake Fork Reservoir |
| 14. Lake Kickapoo | 53. Toledo Bend Reservoir |
| 15. Lake Arrowhead | 54. Lake Palestine |
| 16. Lake Texoma | 55. Lake Tyler |
| 17. Pat Mayse Lake | 56. Sam Rayburn Reservoir |
| 18. Cooper Lake | 57. B. A. Steinhagen Lake |
| 19. Lake Sulphur Springs | 58. Cedar Creek Reservoir |
| 20. Lake Tawakoni | 59. Lake Livingston |
| 21. Bridgeport Reservoir | 60. Lake Conroe |
| 22. Eagle Mountain Reservoir | 61. Red Bluff Reservoir |
| 23. Benbrook Lake | 62. E. V. Spence Reservoir |
| 24. Joe Pool Lake | 63. Twin Buttes Reservoir |
| 25. Ray Roberts Lake | 64. O. C. Fisher Lake |
| 26. Lewisville Lake | 65. O. H. Ivie Reservoir |
| 27. Grapevine Lake | 66. Lake Buchanan |
| 28. Lavon Lake | 67. Intl. Amistad Reservoir |
| 29. Lake Ray Hubbard | 68. Somerville Lake |
| 30. Richland-Chambers Creek Lake | 69. Lake Travis |
| 31. Navarro Mills Lake | 70. Canyon Lake |
| 32. Bardwell Lake | 71. Coletto Creek Reservoir |
| 33. Hubbard Creek Reservoir | 72. Medina Lake |
| 34. Lake Graham | 73. Lake Houston |
| 35. Possum Kingdom Lake | 74. Lake Texana |
| 36. Lake Palo Pinto | 75. Choke Canyon Reservoir |
| 37. Lake Granbury | 76. Lake Corpus Christi |
| 38. Lake Pat Cleburne | 77. Intl. Falcon Reservoir |
| 39. Whitney Lake | |

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

Name of Lake or Reservoir	No. on Map	Conservation	Conservation	Change since Late October 2003 (acre-feet) (%)	Change since Late November 2002 (acre-feet) (%)	
		Storage Capacity (acre-feet)	Storage Late Nov. 2003 (acre-feet) (%)			
HIGH PLAINS						
Palo Duro Reservoir	1	60,900	2,970	5	-170 0	-640 -1
Lake Meredith (Texas)	2	500,000	141,880	28	-6,140 -1	-57,570 -12
Lake Meredith (Texas and Oklahoma)	(2)	779,560	141,880	18	-6,140 -1	-57,570 -7
MacKenzie Reservoir	3	46,250	6,010	13	-170 0	-2,120 -5
White River Lake	4	31,850	5,670	18	-290 -1	20 0
TOTAL		639,000	156,530	24	-6,770 -1	-60,310 -9
LOW ROLLING PLAINS						
Greenbelt Reservoir	5	58,200	23,720	41	-270 0	680 1
Lake Kemp	6	319,600	170,810	53	-3,620 -1	-56,890 -18
Miller's Creek Reservoir	7	27,890	12,240	44	-360 -1	-3,040 -11
Fort Phantom Hill Reservoir	8	70,030	31,100	44	-1,520 -2	-13,830 -20
Lake Stamford	9	52,700	32,790	62	-940 -2	-7,520 -14
Lake J. B. Thomas	10	202,300	21,750	11	-140 0	570 0
Lake Colorado City	11	30,800	20,620	67	-450 -1	3,960 13
Champion Creek Reservoir	12	41,600	3,450	8	-100 0	1,180 3
Hords Creek Lake	13	8,600	2,520	29	-90 -1	-30 0
TOTAL		811,720	319,000	39	-7,490 -1	-74,920 -9
NORTH CENTRAL						
Lake Kickapoo	14	106,000	61,730	58	-2,440 -2	-19,870 -19
Lake Arrowhead	15	262,100	121,370	46	-2,520 -1	-32,100 -12
Lake Texoma	16	2,722,300	2,225,820	82	-48,180 -2	-395,190 -15
Pat Mayse Lake	17	124,500	105,000	84	-830 -1	-13,280 -11
Cooper Lake	18	273,000	224,340	82	-15,230 -6	-48,660 -18
Lake Sulphur Springs	19	17,710	15,700	89	-230 -1	-1,770 -10
Lake Tawakoni	20	936,200	787,600	84	-8,700 -1	-86,100 -9
Bridgeport Reservoir	21	374,830	235,300	63	-8,300 -2	-42,100 -11
Eagle Mountain Reservoir	22	178,380	137,600	77	-100 0	-3,400 -2
Benbrook Lake	23	88,200	71,840	81	-300 0	-5,970 -7
Joe Pool Lake	24	175,800	175,790	100	-10 0	730 0
Ray Roberts Lake	25	798,760	730,360	91	-6,930 -1	-51,970 -7
Lewisville Lake	26	555,000	513,990	93	-1,760 0	-41,010 -7
Grapevine Lake	27	187,700	156,560	83	-5,060 -3	-6,500 -3
Lavon Lake	28	443,800	336,040	76	-4,650 -1	-44,790 -10
Lake Ray Hubbard	29	413,420	346,800	84	-1,900 0	-52,800 -13
Richland-Chambers Creek Lake	30	1,103,820	1,032,000	93	-21,000 -2	2,000 0
Navarro Mills Lake	31	55,810	49,500	89	-970 -2	-2,620 -5
Bardwell Lake	32	53,580	43,530	81	-870 -2	2,050 4
Hubbard Creek Reservoir	33	317,800	123,790	39	-2,080 -1	-27,310 -9
Lake Graham	34	45,000	22,730	51	-720 -2	-7,210 -16
Possum Kingdom Lake	35	551,820	427,600	77	-18,600 -3	-55,600 -10
Lake Palo Pinto	36	27,650	13,720	50	-990 -4	-9,130 -33
Lake Granbury	37	135,680	132,700	98	300 0	2,000 1
Lake Pat Cleburne	38	25,300	20,280	80	-600 -2	100 0
Whitney Lake	39	622,800	442,640	71	-9,480 -2	-23,130 -4
Waco Lake	40	144,500	144,500	100	0 0	4,220 3
Proctor Lake	41	55,590	49,450	89	-1,880 -3	-6,000 -11
Belton Lake	42	434,500	432,980	100	-1,230 0	-1,520 0
Stillhouse Hollow Lake	43	226,060	219,680	97	-1,200 -1	-6,380 -3
Lake Georgetown	44	37,010	23,440	63	-1,800 -5	-13,570 -37
Granger Lake	45	54,280	46,040	85	-570 -1	-8,240 -15
Lake Limestone	46	215,750	201,200	93	-2,700 -1	-14,550 -7
Lake Brownwood	47	143,400	129,100	90	-2,200 -2	-2,680 -2
TOTAL		11,908,050	9,800,720	82	-173,730 -1	-1,012,350 -9

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

Name of Lake or Reservoir	No. on Map	Conservation	Conservation		Change since		Change since		
		Storage Capacity (acre-feet)	Storage Late Nov. 2003 (acre-feet) (%)		Late October 2003 (acre-feet) (%)	Late November 2002 (acre-feet) (%)			
EAST									
Wright Patman Lake	48	142,700	142,700	100	0	0	0	0	
Lake Cypress Springs	49	66,800	62,700	94	-30	0	-4,100	-6	
Lake Bob Sandlin	50	202,300	179,300	89	-3,000	-1	-21,300	-11	
Lake O' the Pines	51	252,000	222,460	88	-4,970	-2	-21,120	-8	
Lake Fork Reservoir	52	635,200	575,400	91	-4,800	-1	-59,800	-9	
Toledo Bend Reservoir	53	4,472,900	3,666,000	82	181,000	4	-127,000	-3	
Lake Palestine	54	411,300	370,310	90	-3,130	-1	-2,410	-1	
Lake Tyler	55	73,700	67,780	92	-2,040	-3	-5,920	-8	
Sam Rayburn Reservoir	56	2,876,300	2,347,640	82	38,200	1	-213,140	-7	
B. A. Steinhagen Lake	57	94,200	84,520	90	-3,370	-4	390	0	
Cedar Creek Reservoir	58	637,050	558,700	88	-12,000	-2	-45,600	-7	
Lake Livingston	59	1,750,000	1,750,000	100	15,000	1	10,000	1	
Lake Conroe	60	429,900	417,000	97	1,700	0	1,000	0	
TOTAL		12,044,350	10,444,510	87	202,560	2	-489,000	-4	
TRANS-PECOS									
Red Bluff Reservoir	61	307,000	55,140	18	4,550	1	9,020	3	
TOTAL		307,000	55,140	18	4,550	1	9,020	3	
EDWARDS PLATEAU									
E. V. Spence Reservoir	62	488,760	47,990	10	-2,620	-1	4,000	1	
Twin Buttes Reservoir	63	177,800	4,420	2	-40	0	-1,580	-1	
O.C. Fisher Lake	64	119,200	3,170	3	-90	0	-300	0	
O. H. Ivie Reservoir	65	554,340	200,760	36	-4,550	-1	-15,240	-3	
Lake Buchanan	66	896,980	835,690	93	-4,300	0	-39,310	-4	
Amistad Reservoir (Texas)	67	1,771,030	1,184,000	67	46,000	3	420,000	24	
Amistad Reservoir (Texas and Mexico)	(67)	3,151,300	1,502,000	48	35,000	1	515,000	16	
TOTAL		4,008,110	2,276,030	57	34,400	1	367,570	9	
SOUTH CENTRAL									
Somerville Lake	68	155,060	153,710	99	680	0	-1,350	-1	
Lake Travis	69	1,144,100	959,850	84	-10,850	-1	-175,950	-15	
Canyon Lake	70	385,600	378,110	98	580	0	-2,390	-1	
Coletto Creek Reservoir	71	35,060	31,740	91	-540	-2	-190	-1	
Medina Lake	72	254,000	231,700	91	-4,900	-2	-22,300	-9	
TOTAL		1,973,820	1,755,110	89	-15,030	-1	-202,180	-10	
UPPER COAST									
Lake Houston	73	128,860	128,860	100	0	0	0	0	
Lake Texana	74	157,900	155,340	98	200	0	-1,320	-1	
TOTAL		286,760	284,200	99	200	0	-1,320	0	

CONSERVATION STORAGE DATA FOR SELECTED MAJOR TEXAS RESERVOIRS

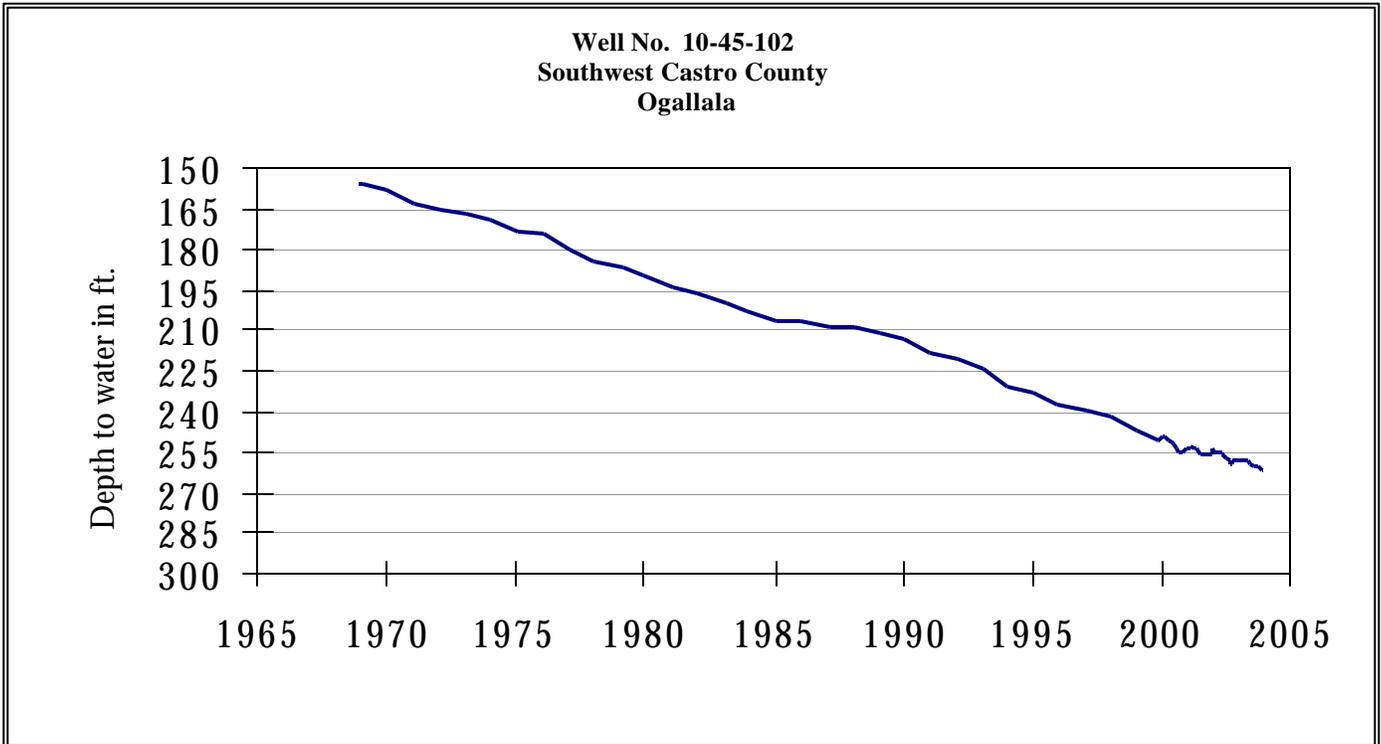
Name of Lake or Reservoir	No. on Map	Conservation Storage Capacity (acre-feet)	Conservation Storage Late Nov. 2003 (acre-feet) (%)		Change since Late October 2003 (acre-feet) (%)		Change since Late November 2002 (acre-feet) (%)		
SOUTHERN									
Choke Canyon Reservoir	75	695,260	686,000	99	-6,000	-1	-5,000	-1	
Lake Corpus Christi	76	241,240	241,000	100	-240	0	-240	0	
Falcon Reservoir (Texas)	77	1,555,120	521,000	34	35,000	2	163,000	10	
Falcon Reservoir (Texas and Mexico)	(77)	2,653,290	1,137,000	43	57,000	2	426,000	16	
TOTAL		2,491,620	1,448,000	58	28,760	1	157,760	6	
STATE TOTAL		34,470,430	26,539,240	77	67,450	0	-1,305,730	-4	

Note:

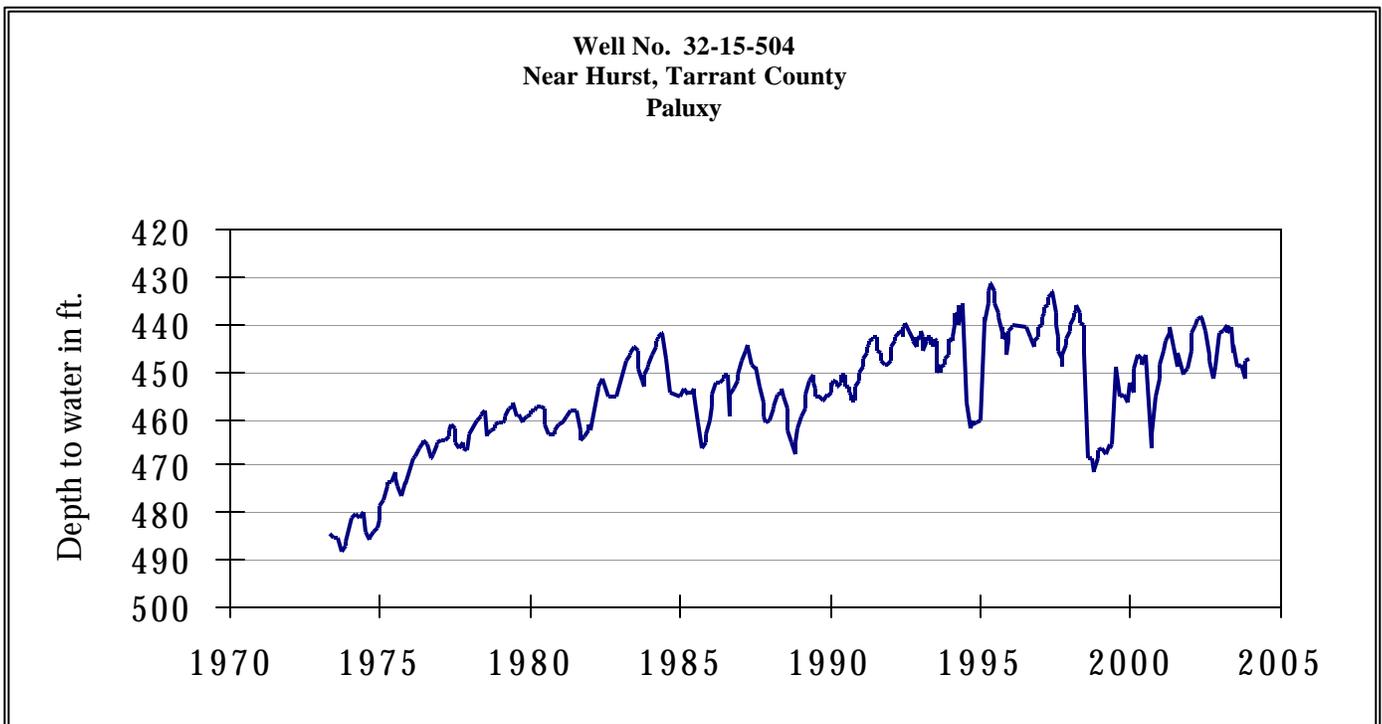
Conservation storage capacity is the space available to store water above the level of invert of lowest outlet works and below the level of top of conservation pool or normal maximum operating level. Conservation storage refers to the volume of water held within the conservation storage space. Not included is any water in flood control storage (above the top of conservation pool or normal maximum operating level), or any water in so called dead storage (in the bottom of the reservoir, below the invert of lowest outlet works and consequently not removable by gravity flow alone.) Percentage of conservation storage is based on the conservation storage capacity of the reservoir and the conservation storage in the reservoir for date shown. Percent change is given by % Change = 100 * (current conservation storage - past conservation storage)/conservation storage capacity.

Current data are based on elevations near end of month at 77 reservoirs that together represent 98 percent of the total conservation storage capacity of major Texas reservoirs (those with capacity of 5,000 acre-feet or more each). Preliminary figures are shown for the Texas' share of conservation storage in all reservoirs.

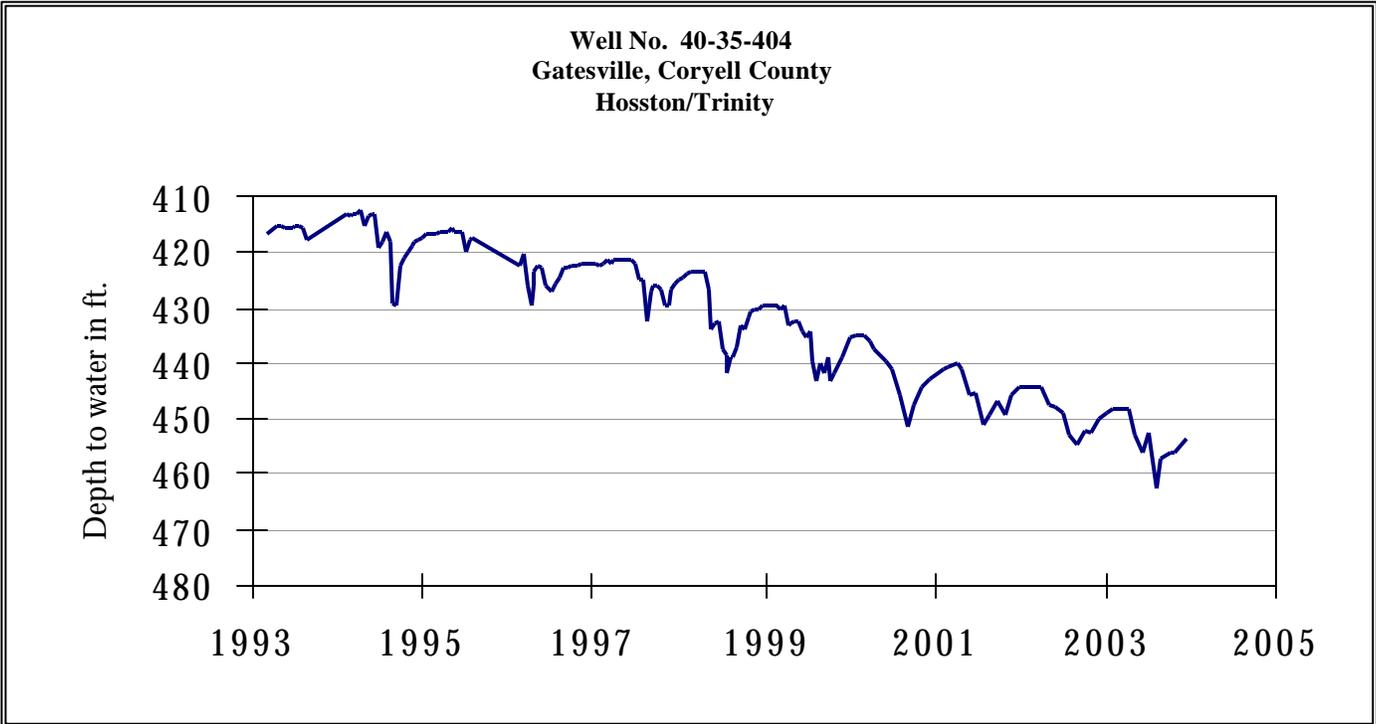
NOVEMBER GROUND WATER LEVELS IN OBSERVATION WELLS



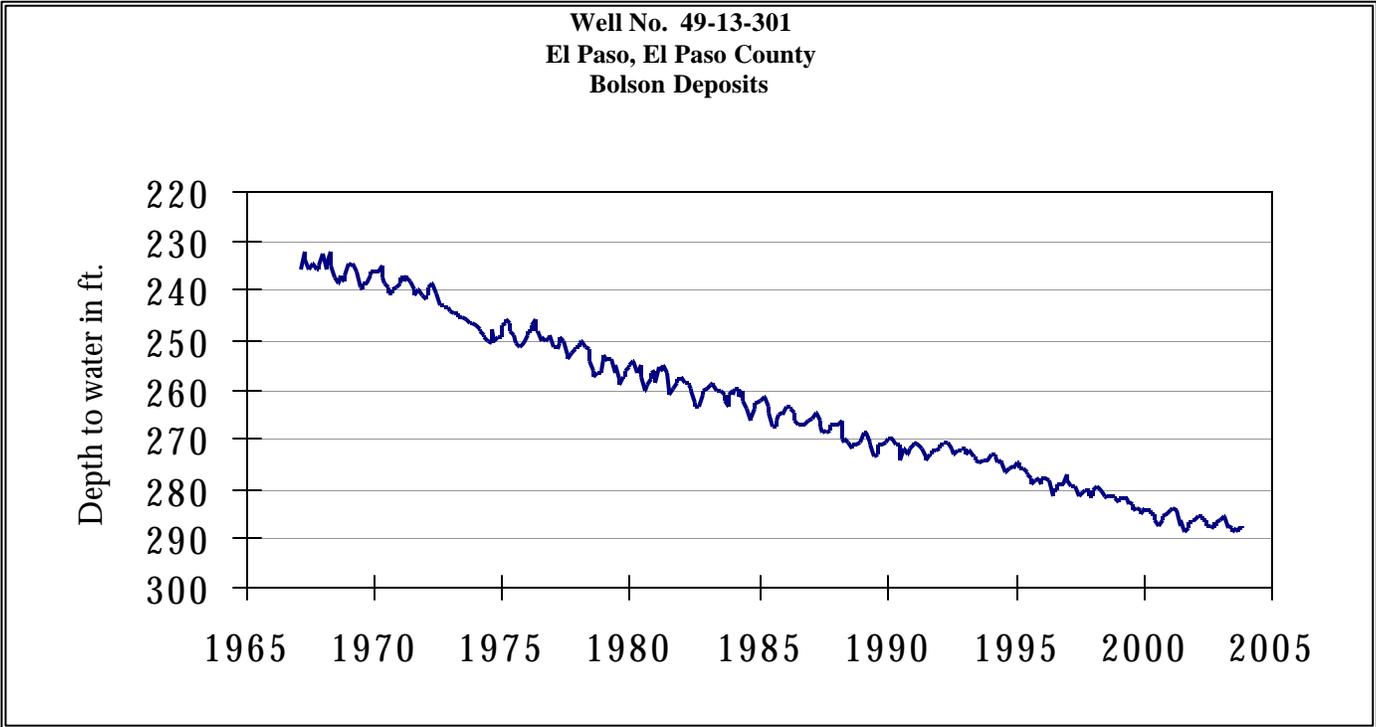
The late November water-level measurement in this Ogallala aquifer well, elevation 3,816 feet above sea level, was 261.20 feet below land surface. This measurement was 0.20 feet below last month's measurement, 2.86 feet below last year's measurement, and 105.20 feet below the initial measurement recorded in 1968.



The late November water-level measurement in this Paluxy Formation Trinity aquifer well, elevation 535 feet above sea level, was 447.20 feet below land surface. This measurement was 0.70 feet above last month's measurement, 3.10 feet below last year's measurement, and 53.81 feet below the initial measurement recorded in 1953.

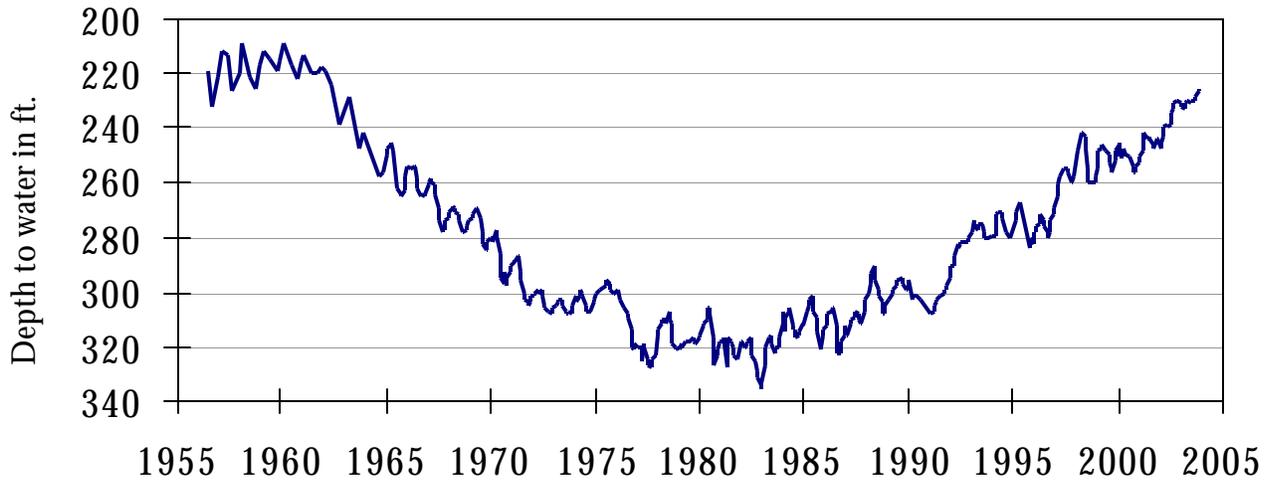


The late November water-level measurement in this Hosston Formation Trinity aquifer well, elevation 823 feet above sea level, was 456.00 feet below land surface. This measurement was 2.50 feet above last month's measurement, 3.68 feet below last year's measurement, and 161.50 feet below the initial measurement recorded in 1955.



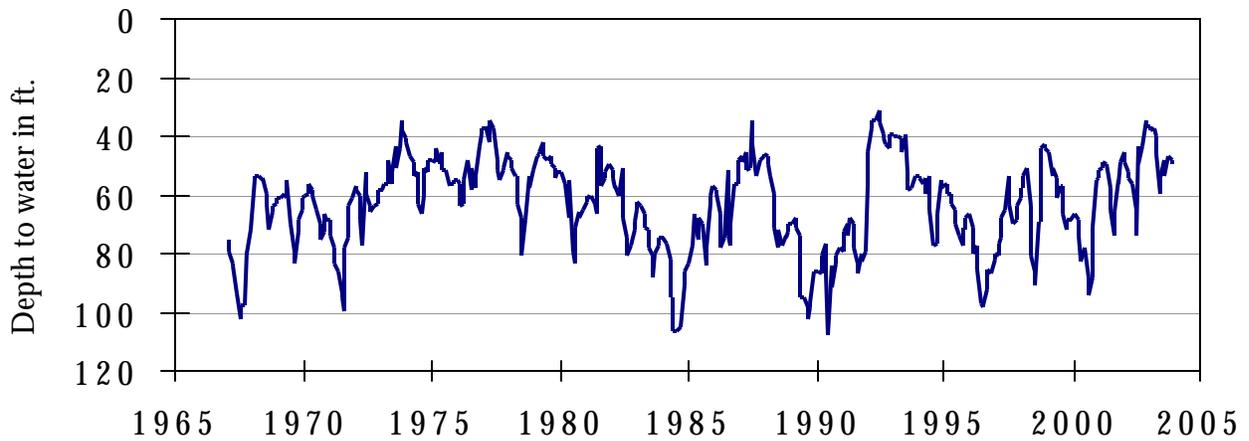
The late November water-level measurement in this Hueco Bolson aquifer well, elevation 3,882 feet above sea level, was 287.60 feet below land surface. This was 0.10 feet above last month's measurement, 0.86 feet below last year's measurement, and 55.70 feet below the initial measurement recorded in 1964.

**Well No. 65-14-409
Alief, Harris County
Evangeline**



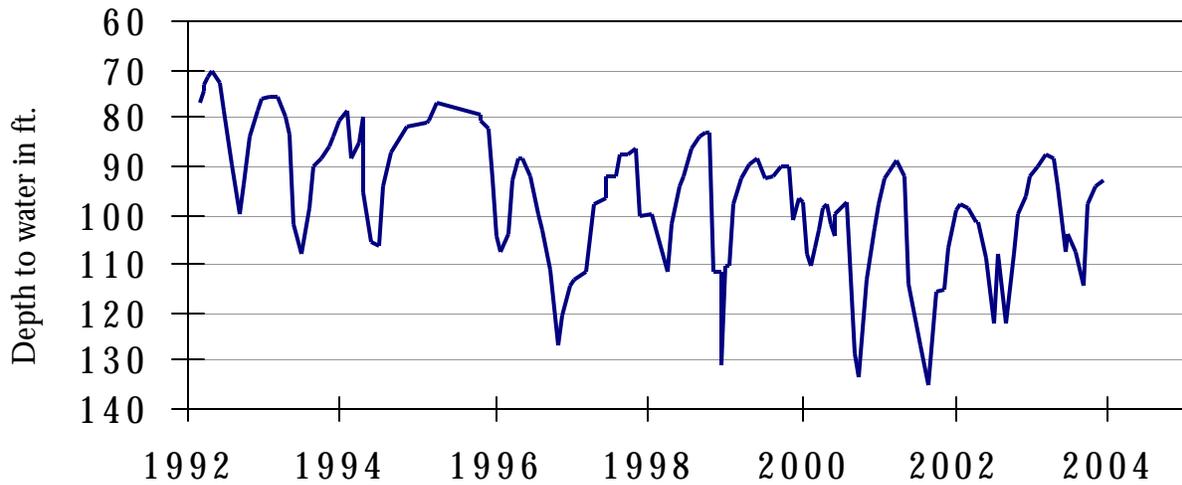
The late November water-level measurement in this Evangeline Formation Gulf Coast aquifer well, elevation 66 feet above sea level, was 225.30 feet below land surface. This was 1.70 feet above last month's measurement, 4.15 feet above last year's measurement, and 122.07 feet below the initial measurement recorded in 1947.

**Well No. 68-37-203 (J-17)
In San Antonio, Bexar County
Edwards and Associated Limestones**



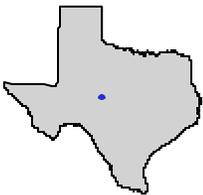
The late November water-level measurement in this Edwards (BFZ) aquifer well, elevation 731 feet above sea level, was 49.40 feet below land surface. This was 1.00 feet below last month's measurement, 13.09 feet below last year's measurement, and 10.22 feet above the initial measurement recorded in 1962.

**Well No. 68-60-912
Between Poteet and Pleasanton, Atascosa County
Carrizo**



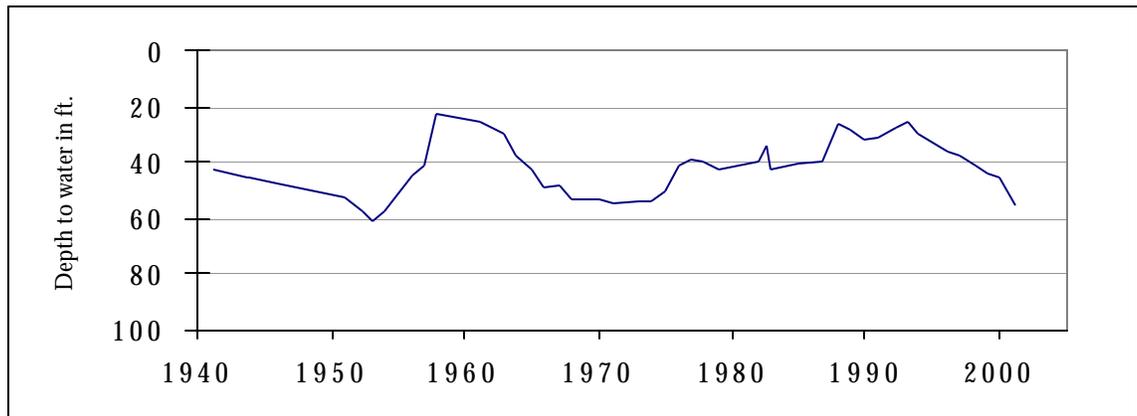
The late November water-level measurement in this Carrizo aquifer well, elevation 446 feet above sea level, was 93.04 feet below land surface. This measurement was 1.07 feet above last month's measurement, 3.00 feet above last year's measurement, and 11.79 feet below the initial measurement recorded in 1965.

HYDROGRAPH OF THE MONTH



Each month this space features a new hydrograph (marked with the • symbol on the map) depicting different aquifers and different conditions in Texas.

**Well No. 4329701
Tom Green County**



This 82 ft. observation well, located within the city limits of San Angelo at an elevation of 1,914 feet above sea level, was completed in the alluvial deposits of the Leona Formation (Lipan Aquifer). The majority of Leona Fm. groundwater is used for irrigation due to elevated saline and nitrate concentrations that exceed drinking water standards.

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